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ABSTRACT

This study sought to determine if there were significant differences in the performances of student teachers trained in the curriculum materials designed to implement findings from research on effective teaching and those of student teachers trained in traditional curriculum. Thirty-six students enrolled in an upper level course, Principles of High School Teaching, during the 1986 Fall Semester, were subdivided into groups of 18 each and were randomly assigned to experimental or control groups. Each group received 40 hours of instruction during the first eight weeks of the semester. The experimental group studied materials in the areas of research findings on effective teaching, classroom interactions, classroom management, and instructional evaluation. Additionally, they conducted simulated practices of teaching skills related to the materials studied. The control group studied materials traditionally taught in the Principles of High School Teaching course. Opportunities for this group to practice specific teaching skills were limited. Results indicated that the experimental group achieved significantly higher scores than did the control group on the criterion-referenced test on effective teaching concepts. Also, the experimental group demonstrated an overall higher performance in the classroom than did the control group. Implications for improvement of the preservice education program are discussed. (Author/JD)

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# THE EFFECTIVENESS OF RESEARCH APPLICATIONS FOR TEACHING MATERIALS ON ACHIEVEMENT AND CLASSROOM PERFORMANCE OF SELECTED PRESERVICE TEACHERS

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# THE EFFECTIVENESS OF RESEARCH APPLICATIONS FOR TEACHING MATERIALS ON ACHIEVEMENT AND CLASSROOM PERFORMANCE OF SELECTED PRESERVICE TEACHERS

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The purpose of this study was to determine if there were significant differences in the performances of student teachers trained in the curriculum materials designed to implement findings from research on effective teaching and those of student teachers trained in traditional curriculum at Mississippi State University. Achievement in cognitive understandings of Research Applications for Teaching (RAFT) materials as determined by performance on a 20-item criterion-referenced test and classroom performances as assessed by 30 indicators on the Mississippi Teacher Assessment Inventory (MTAI) were the two criteria used to study pre-service teacher performance.

Thirty-six students enrolled in an upper level course called Principles of High School Teaching during the 1986 Fall semester were used as subjects for the study. These students were subdivided into groups of 18 each and then randomly assigned as experimental and control groups, respectively. Each group received 40 hours of instruction during the first eight weeks of the semester. The experimental group studied materials in the areas of research findings on effective teaching, classroom interactions, classroom management, and instructional evaluation. Additionally, they conducted simulated practices of teaching skills related to the materials studied. The control group studied materials traditionally taught in the Principles of High School Teaching course. Also, opportunities for this group to practice specific teaching skills were limited. Each student was evaluated by a college supervisor

using the MTAI near the end of the eight-week student teaching experience. Data were analyzed through the use of Analysis of Variance (ANOVA).

The following results were indicated by the data analysis: (1) the experimental group achieved significantly higher than did the control group on the criterion-referenced test on effective teaching concepts; and (2) the experimental group demonstrated an overall higher performance in the classroom than did the control group.

The results of this study have several implications for modification in the preservice teacher education program at Mississippi State University. Based upon the findings, it would appear that (1) more attention should be given to the careful selection of curriculum materials for upper level courses related to teacher practices in the classroom; (2) more opportunities should be provided for preservice teachers to conduct simulated practices of specific teaching skills; and (3) more opportunities for evaluation of specific teaching skills should be provided prior to student teaching.

# THE EFFECTIVENESS OF RESEARCH APPLICATIONS FOR TEACHING MATERIALS ON ACHIEVEMENT AND CLASSROOM PERFORMANCE OF SELECTED PRESERVICE TEACHERS

The ability of preservice teachers in secondary education to make the nexus between theoretical or abstract constructs considered in the various college or university courses and the application of these constructs in the real classroom setting has been a concern for teacher educators for quite some time. Indeed, it is not uncommon for teacher educators to hear preservice teachers during their student teaching experience lament that they were not prepared for their real classroom events through the professional education courses. The lamentations of preservice teachers are quite often supported by inservice teachers (school supervisors) who challenge their subjects to "forget everything learned at the University because you are now in the real world and those concepts, principles, theories, methods, et cetera just simply do not work."

In addition to the above criticisms, the credibility of teacher education programs has been questioned by those who have made recent assessments of problems in the secondary schools of America (Boyer, 1983; Sizer, 1984). Many of the national reports have recommended that the role of teacher education institutions in both the preparation and certification of teachers be significantly reduced. Allegedly, preservice teachers at the secondary level are not being prepared to adequately meet the challenges and to facilitate the changes needed to help their pupils respond to the expectations and demands of today´s society.

Traditionally, teacher education institutions have operated under severe bureaucratic and legislative restrictions. Specifically, teacher education programs in the state of Mississippi have, for several years, been determined by state legislated curriculum and state teacher certification guidelines. The Mississippi Educational Reform Act of 1982 has provided opportunities for more flexibility to teacher education programs, however. Through the newly created State Board of Education, guidelines have been approved which allow teacher education institutions to individually submit their own teacher preparation programs to the State Department of Education. These flexible guidelines afford a unique opportunity for teacher education institutions to make significant program modifications.

It has been quite evident for some time that, at the secondary level, the programs of study in preservice teacher education at Mississippi State University (MSU) have needed significant changes. Very few meaningful changes have been made in these programs since the emergence of the behavioral objectives movement in the 1960's. In recognition of these needed changes along with the new flexible guidelines provided by the State Department of Education, members of the Secondary Education Faculty at MSU have developed four instructional modules to be used as a part of its professional preparation for preservice teachers. With the support of a small grant from the National Institute of Education (NIE), the modules were prepared and pretested for their effectiveness in improving the teaching performances of beginning teachers during the 1985-86 academic year. The preservice teachers were trained in the skill areas identified by research associated with effective teaching and effective schools (Brophy, 1979;

Edmonds, 1979; Evertson, Hawley, & Zlotnik, 1984; Fisher, Marliave, & Filby, 1979; Mackenzie, 1983; Ornstein & Levine, 1985; Purkey & Smith, 1982; Rowan, Bossert, & Dwyer, 1983). The modules, Research Foundations for Effective Teaching; Classroom Management; Classroom Interactions; and Evaluation of Instruction, were designed to give secondary preservice teachers some specific practice teaching skills under simulated conditions. These skills were later reinforced in real classroom settings during the student teaching experience.

Following the preparation and pretesting of the four modules, it was determined that a more extensive evaluation of the effectiveness of the related skills in the performance of preservice teachers should be completed. Consequently, an evaluative study was conducted during the 1986-87 academic year at MSU.

The purpose of this evaluative study was to determine if there were significant differences in the performances of student teachers trained in the curriculum materials designed to implement findings from research on effective teaching and those of student teachers trained in traditional curriculum at MSU. Achievement in cognitive understandings of Research Applications for Teaching (RAFT) materials as determined by performance on a 20-item criterion-referenced test and classroom performances as assessed by 30 indicators on the Mississippi Teacher Assessment Inventory (MTAI) were the two criteria used to study pre-service teacher performance.

The hypotheses tested in the study were as follows:

1. A significant difference will exist in achievement of preservice teachers relative to the understandings of research findings

on effective teaching between those trained through the use of RAFT curriculum materials and those trained through the use of traditional curriculum materials.

2. A significant difference will exist in the quality of classroom performance exhibited by preservice teachers trained through use of the RAFT curriculum materials and those trained through use of traditional curriculum materials when classroom performance is assessed by use of 30 indicators on the MTAI.

## Methods and Procedures

### Evaluation Design

The evaluation study was organized in a randomized posttest-only control group design. The type of curriculum materials used in the study represented the independent variable. Achievement scores on a criterion-related test and ratings of classroom performances of student teachers by college supervisors after completion of the instruction represented the dependent variables.

### Subjects

Thirty-six (36) students enrolled in an upper level course called Principles of High School Teaching during the 1986 Fall Semester were used as subjects for the study. These students were subdivided into two groups of 18 each and then randomly assigned as experimental and control groups, respectively. Both groups consisted of senior-level students pursuing the Bachelor of Science degree in Education with certification at the secondary school level.

### Treatment

The experimental and control groups each received 40 hours of

instruction during the first eight weeks of the semester. Each group met for approximately one hour per day on Monday through Friday during this period. The experimental group studied RAFT materials in the areas of research findings on effective teaching, classroom interactions, classroom management, and instructional evaluation. Additionally, each group participant conducted simulated practices of teaching skills related to the materials studied and evaluated videotapes of their performance in critical areas in collaboration with their instructor. Finally, each group participant completed an individual assessment of their personal traits by responding to a battery of four instruments designed to measure personal characteristics similar to those reported in the effective teaching literature.

The control group studied materials traditionally taught in the Principles of High School Teaching course. Opportunities for this group to practice specific teaching skills were limited. Also, there were no provisions made in this course to videotape the performance of these students for evaluative purposes nor to allow them to complete individual assessments of their personal characteristics consistent with the effective teaching literature.

Instrumentation

Two instruments were used to gather data for testing the hypotheses in the study.

1. Effective Teaching and Achievement. This instrument is a criterion-related test developed by the investigators. It consists of twenty (20) multiple choice items (with four choices for each item) designed to test a student's understandings of the concepts taught on

the results of effective teaching research. The subjects completed this test at the end of their eight-week instructional period. An alpha coefficient of .93 was computed to determine the internal reliability of the instrument.

2. Mississippi Teacher Assessment Inventory (MTAI). This instrument was adapted from the state of Georgia's studies of beginning teachers for use in the state of Mississippi. Three major subscales are included in the MTAI: Teacher Preparation and Materials (TPM); Position Skills (PS) and Interpersonal Skills (IS). The PS and IS subscales, which consist of thirty (30) indicators, were used in this study to assess the performance of student teachers at the conclusion of this eight-week period during the latter part of the semester. The use of these subscales was justified because the 30 indicators therein are closely related to the skills taught in the RAFT project. An alpha coefficient of .86 was computed to determine the internal reliability of the criteria included in the two subscales.

Data Analysis Method

The data collected for this study were analyzed through the use of analysis of variance (ANOVA) which statistically compared the means for the two groups, respectively, on achievement and classroom performances. The level of significance for testing the hypotheses was .05.

## Analysis and Results

Means for the experimental and control groups on the Effective Teaching and Achievement instrument were compared to test the first hypothesis. Results of this comparison in Table 1 (see p. 11)

indicate a significant difference in achievement on effective teaching concepts ($F = 25.40$, $p < .001$). Specifically, the experimental group indicated achievement at a significantly higher level than that indicated by the control group.

Means for the experimental and control groups on classroom performances as assessed by 30 indicators on the MTAI were compared to test the second hypothesis. Results of this comparison in Table 2 (See p. 12) indicate a significant difference in the classroom performances of the two groups ($F = 3.92$, $p < .05$). Specifically, the experimental group demonstrated a significantly higher level of classroom performance than that demonstrated by the control group.

A comparison of the experimental and control groups on each of the 30 indicators assessed through the use of the MTAI is provided in Table 3 (see pp. 13-15). Results of this comparison indicated that the classroom performance of the experimental group was significantly higher on eight (8) of the 30 indicators on the MTAI. These eight (8) indicators were as follows: (a) demonstrates ability to conduct lessons using a variety of teaching methods; (b) demonstrates ability to work with individuals, small groups, and large groups; (c) uses procedures which get learners initially involved in lessons; (d) helps learners recognize the purpose or importance of topics or activities; (e) attends to routine tasks; (f) demonstrates warmth and friendliness; (g) demonstrates sensitivity to the needs and feelings of learners; and (h) demonstrates patience, empathy, and understanding. Overall, the performance of the experimental group was rated higher than that of the control group on 28 of the 30 indicators considered. The control group

was rated higher than the experimental group only on the following indicators: (a) provides feedback to learners about their behavior and (b) maintains appropriate classroom behavior.

## Implications of the Study

Clearly, the analysis revealed that those students who were taught in the classroom setting which emphasized the use of the RAFT curriculum materials know significantly more about research findings on effective teaching than their counterparts whose classroom instruction emphasized the traditional curriculum. This finding was not unexpected since the concepts assessed by the Effective Teaching and Achievement instrument were emphasized throughout the course for the experimental group.

Perhaps the most significant aspect of this evaluative research study to the investigators was that the RAFT curriculum materials apparently fostered the development of observable classroom behaviors and instructional skills of selected student teachers to a higher level than would have been observed under traditional conditions. For example, the instructor focused particular attention on reinforcing and encouraging learner involvement in instruction when the classroom interaction module was considered. Additionally, extensive consideration was given to how to demonstrate enthusiasm for one's teaching and for pupil learning.

Clearly, those preservice teachers who received the experimental treatment were rated higher by their college supervisor on 28 of the 30 indicators included on the MTAI in which eight of the indicators were found to be statistically significant. These results were quite

encouraging and have several implications for modification in the preservice program in secondary education at Mississippi State University. Based upon the findings, it would appear that (1) more attention should be given to the careful selection of curriculum materials for upper level courses related to teacher practices in the classroom; (2) more opportunities should be provided for preservice teachers to conduct simulated practices of specific teaching skills; and (3) more opportunities for evaluation of specific teaching skills should be provided prior to student teaching.

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Table 1

Comparison of Achievement for RAFT and

Control Groups on Concepts Related to Effective Teaching

| Groups | N | $\bar{X}$ | SD | F |
|---|---|---|---|---|
| Experimental (RAFT) | 18 | 14.95 | 1.96 | |
| Control | 16 | 11.19 | 2.59 | |
| | | | | 25.40* |

*p < .001

Table 2

Comparison of Overall Classroom

Performance for RAFT and Control Groups

| Groups | N | $\bar{X}$ | SD | F |
|---|---|---|---|---|
| Experimental (RAFT) | 17 | 129.85 | 18.77 | |
| Control | 15 | 114.00 | 20.42 | |
| | | | | 3.92* |

*p < .05

Table 3

Comparison of RAFT and Control Groups on Classroom Performance as Demonstrated on Specific Indicators of the MTAI

| | Experimental (RAFT) | | | Control | | | |
|---|---|---|---|---|---|---|---|
| | N | $\bar{X}$ | SD | N | $\bar{X}$ | SD | F |
| 13. Uses teaching methods appropriate for objectives, learners, and environment | 17 | 4.25 | .87 | 15 | 3.93 | .96 | .79 |
| 14. Uses instructional equipment and other instructional aids | 17 | 3.67 | .89 | 15 | 2.93 | 1.03 | 2.03 |
| 15. Uses instructional materials that provide learners with appropriate practice on objectives | 17 | 4.08 | .90 | 15 | 3.47 | .99 | 2.80 |
| 16. Gives directions and explanations to lesson content | 17 | 4.00 | .95 | 15 | 3.80 | 1.08 | .25 |
| 17. Clarifies direction and explanation when learners misunderstand lesson content | 17 | 4.08 | .90 | 15 | 3.67 | .90 | 1.43 |
| 18. Uses responses and/or questions from learners in teaching | 17 | 4.04 | .85 | 15 | 3.67 | .49 | 1.68 |
| 19. Provides feedback regarding lesson content to learners throughout lesson | 17 | 4.25 | .75 | 15 | 3.73 | .80 | 2.93 |
| 20. Uses acceptable written and oral expression with learners | 17 | 4.83 | .39 | 15 | 4.47 | .74 | 2.38 |
| 21. Implementing learning activities in a logical sequence | 17 | 4.17 | .72 | 15 | 3.80 | .67 | 1.86 |
| 22. Demonstrates ability to conduct lessons using a variety of teaching methods | 17 | 4.08 | .79 | 15 | 3.27 | .80 | 7.01* |

| | Experimental (RAFT) | | | Control | | | |
|---|---|---|---|---|---|---|---|
| | N | $\bar{X}$ | SD | N | $\bar{X}$ | SD | F |
| 23. Demonstrates ability to work with individuals, small groups and large groups | 17 | 4.17 | .83 | 15 | 3.33 | 1.05 | 5.08* |
| 24. Uses procedures which get learners initially involved in lessons | 17 | 4.17 | .72 | 15 | 3.07 | 1.28 | 7.05* |
| 25. Provides learners with opportunities for participating | 17 | 4.00 | .60 | 15 | 3.60 | .91 | 1.71 |
| 26. Maintains learner involvement in lesson | 17 | 4.50 | 1.00 | 15 | 3.87 | .92 | 2.91 |
| 27. Reinforces and encourages efforts of learners to maintain involvement | 17 | 4.50 | .67 | 15 | 4.00 | 1.87 | 1.98 |
| 28. Helps learner recognize the purpose/importance of topical activities | 17 | 4.50 | .67 | 15 | 3.33 | 1.05 | 11.16** |
| 29. Demonstrates knowledge in subject area | 17 | 4.42 | .67 | 15 | 3.57 | 1.13 | 2.23 |
| 30. Attends to routine tasks | 17 | 4.08 | .90 | 15 | 3.27 | .59 | 8.03** |
| 31. Uses instruction time efficiently | 17 | 4.58 | .79 | 15 | 4.53 | .74 | .03 |
| 32. Provides a learning environment that is attractive and orderly | 17 | 4.58 | .67 | 15 | 4.33 | .82 | .78 |
| 33. Communicates personal enthusiasm | 17 | 4.08 | 1.24 | 15 | 3.67 | 1.40 | .65 |
| 34. Stimulates learner interest | 17 | 4.42 | 1.00 | 15 | 3.67 | .98 | 3.87 |
| 35. Conveys impression of knowing what to do and how to do it | 17 | 4.08 | .90 | 15 | 3.73 | 1.03 | .86 |
| 36. Demonstrates warmth and friendliness | 17 | 4.75 | .45 | 15 | 3.80 | 1.15 | 7.28* |

| | Experimental (RAFT) | | | Control | | | |
|---|---|---|---|---|---|---|---|
| | N | $\bar{X}$ | SD | N | $\bar{X}$ | SD | F |
| 37. Demonstrates sensitivity to needs and feelings of learners | 17 | 4.83 | .39 | 15 | 4.13 | .83 | 7.16* |
| 38. Demonstrates patience, empathy and understanding | 17 | 4.67 | .65 | 15 | 3.80 | 1.15 | 5.43* |
| 39. Provides feedback to learners about their behavior | 17 | 4.25 | 1.21 | 15 | 4.33 | .82 | .05 |
| 40. Promotes comfortable interpersonal relationships | 17 | 4.50 | .90 | 15 | 4.40 | .51 | .73 |
| 41. Maintains appropriate classroom behavior | 17 | 4.17 | 1.27 | 15 | 4.27 | .80 | .06 |
| 42. Manages disruptive behaviors among learners | 17 | 4.42 | 1.30 | 15 | 4.27 | .88 | .12 |

*$p < .05$
**$p < .01$